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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/092,758

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EXAMINER

WONG, LINDA

ART UNIT

PAPER NUMBER

2611

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/092,758

Applicant(s)

NGUYEN ET AL.

Examiner

Linda Wong

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 4/19/2006 have been fully considered but they are not persuasive.
2. Applicant's Arguments: As stated in the final rejection, the applicant argues the following:
 - a. a random walk counter as recited in claim 1 does not perform the same functionalities as an early-late gate approach as presented by the prior art references (page 8, lines 14-27, page 9, lines 1-13, lines 20-27, page 10, lines 1-2 and lines 17-25)
 - b. the timing pulse delay adjustor as recited in claim 1 does not perform the same functionalities as the presented prior art references (page 11, lines 4-7) and
 - c. the threshold within an early-late gate approach has a different meaning from the threshold within a random walk filter (page 10, lines 4-15).
3. Examiner's Rebuttal: The examiner respectfully disagrees the above arguments and arguments regarding the references pointed out based on the arguments stated above.
 - a. Regarding the arguments stated in a. above, in the applicant's arguments, functionalities of the random walk counter are not recited in the limitations of claim 1. Since the applicant acts as their own lexicographer, the examiner searched and rejected claim 1 based on the limitation as recited. Claim 1 recites the limitation "a random walk counter for counting the early signals and

lag signals for generating a running count" (Claim 1, lines 15-16). Limitations such as "The random walk filter, on the other hand, counts the number of times over many data periods that the baseband waveform pulses that are obtained by differentiating the baseband waveform, lead or lag the corresponding delayed or adjusted reference timing pulses" as stated in the applicant's arguments on page 8, lines 23-27, are not recited in the limitations of claim 1. Thus, the examiner respectfully disagrees that the reference does not teach such a limitation. Referring to the reference Smith (US Patent No.: 3544717) in view of Marko et al (US Patent No.: 5463351) in regards to the limitation as recited in claim 1 and reiterated above, as rejected in the final rejection office action mailed 12/13/2005, Smith discloses a counter for counting the early-late signals (Fig. 1, label 10). In Col. 4, lines 19-35 of Smith's specification, Smith discloses counting the early and late pulses outputted from the phase comparator and keeping a running count of such pulses, which based on the limitation as stated reiterated and recited in claim 1, shows Smith teaches the limitation in the claim.

- b. Regarding the argument stated in b. above, functionalities of the timing pulse delay adjustor as stated in the applicant's arguments are not recited in the limitations of claim 1. As stated in the rebuttal above regarding the arguments stated in a., the applicant is its own lexicographer, thus the examiner searched and rejected claim 1 based on the limitation as recited. Claim 1 recites the limitation "a timing pulse delay adjustor for adjusting an adjusted timing pulse

delay communicated to the pulse detector for delaying the adjusted timing pulses for synchronizing the adjusted timing pulses with the data transition pulses when the running count exceeds the predetermined threshold value.”

The examiner interprets this limitation as the timing pulse delay adjustor adjusts or delays an adjusted timing pulse delay communicated to the pulse detector, wherein the pulse detector delays the adjusted timing pulses for synchronizing the adjusted timing pulses with the data transition pulses when the running count exceeds the predetermined threshold value. Based on this interpretation, the examiner respectfully disagrees with the applicant's arguments due to the recited limitations in the claim fail to recite the arguments as stated by the applicant. To elaborate further the rejection of claim 1 regarding the timing pulse delay adjustor, Marko et al discloses phase adjusts a pulse outputted by the accumulator, wherein the output from the phase adjustor is communicated to the phase detector. (Fig. 9b, labels 948,950,956,966,970, Fig. 4, labels 408,412,414,416,418) Marko et al discloses a comparator for comparing the count to a threshold and outputting the adjusted timing pulse to the phase detector. (Col. 4, lines 18-33 and Fig. 4, labels 402 and 424) When the running count is greater than the predetermined threshold (Col. 9, lines 16-21), the comparator sends a signal to the up/down counter which sends a signal to the phase detector. (Col. 9, lines 15-29 and Fig. 9b, label 956,960,966,950 and 980)

- c. Regarding the argument stated in c. above, the applicant does not recite in the limitations of claim 1, "the random walk filter uses two thresholds, the first threshold allows the count to be reset and the second threshold is set so that any count below that threshold would not result in any adjustment to the delay." (page 10, lines 7-10 of the applicant's remarks) Thus, the examiner searched and rejected claim 1 as recited in its limitations. Please review the rejection as stated below for the rejection regarding the limitation of comparing the running count with a predetermined threshold value.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent No.: 3544717) in view of Marko et al (US Patent No.: 5463351).
- a. **Claim 1**, Smith discloses a pulse detector (Fig. 1, label 16 and 11) generating data transition pulses from the baseband signal waveform (Fig. 1, label 11 and Col. 2, lines 14-35), for comparing the data transition pulses with the adjusted timing pulses (Fig. 1, labels T and transition pulses) for generating early and lag signals. (Fig. 1, labels early and late), a counter for counting the early and late signals (Fig. 1, label 10). Although Smith does not disclose a threshold

- comparator and a timing pulse delay adjustor, Marko et al disclose a counter for counting the early and late signals outputted from the phase detector (Fig. 9B, label 950, and early/late accumulator) wherein the accumulator keeps a running count of the early/late pulses (Col. 3, lines 55-59), a threshold comparator (Fig. 4, label 414 and Fig. 9, label 966) comparing the count of early and late pulses with a threshold (Col. 9, lines 15-21 and Col. 3, lines 11-27) and a timing pulse delay adjustor (Fig. 4, labels 414 and 416) outputting an adjustment delay for phase adjustment. (Fig. 4, labels 416, Fig. 9, labels 956 and 7, Col. 3, lines 18-24, and Col. 9, lines 15-21) It would be obvious to one skilled in the art to combine the threshold comparator and timing pulse adjustor found in Marko et al's invention to Smith's timing recovery system to reduce multi-path fading, weak signals, interference and flat fading. (Col. 1, lines 63-67)
- b. **Claim 6**, Smith discloses a data transition pulse generator for generating data transition pulses (Fig. 1, labels 11 and transition pulses), a timing delay for delaying the reference timing pulses into the adjusting timing pulses (Fig. 1, labels 13 and T) and a lead and lag generator for generating lead and lag signals for early or late arrivals (Fig. 1, labels 16, early and late) for data transition pulses (Fig. 1, label transition pulses) relative to adjusted timing pulses (Fig. 1, label T).
- c. **Claim 9**, Marko et al discloses summing the up and down pulses outputted from the phase detector. (Fig. 9B, labels 950,956 and Col. 3, lines 50-59)

5. **Claims 3,4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent No.: 3544717) in view of Marko et al (US Patent No.: 5463351) and further in view of Carlson (US Patent No.: 6167526).
- a. **Claim 3**, Although Marko et al and Smith do not teach selecting a threshold, Carlson discloses a timing system updating or selecting the parameters of a window based on whether the predetermined value is less than the count of the early/late pulses. (Col. 3, lines 45-52 and Fig. 4) It would be obvious to one skilled in the art to incorporate Carlson's invention to Smith and Marko et al's inventions to provide more robust detection circuit, which is "less susceptible and sensitive to noise error."
- b. **Claim 4**, Carlson discloses a threshold selector as recited and rejected in claim 3, and an adaptive means which updates or selects a new threshold when the predetermined rate is less than the adjustment rate. (Col. 3, lines 45-52 and Fig. 4) Although Carlson does not disclose an adaptive means for monitoring the rate in which the timing pulse delay is adjusted, Marko et al discloses monitoring the rate of adjustment. (Col. 3, lines 29-36) It would be obvious to one skilled in the art to incorporate Carlson's invention to Smith and Marko et al's inventions to provide more robust detection circuit, which is "less susceptible and sensitive to noise error."

6. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent No.: 3544717) in view of Marko et al (US Patent No.: 5463351) and further in view of Kim (US Patent No.: 5420895).
 - a. **Claim 5**, Marko et al discloses a magnitude of the early/late count outputted to a comparator, which compares the count with a threshold (Fig. 9, label 960 and 966) and a count sign used for outputting a delay for adjustment (Fig. 9, label 958 and 970). Although Marko et al discloses the opposite sign used for increasing and decreasing the amount of adjustment needed, Kim discloses an adjustment circuit, wherein the count is increased for a lag pulse and decreased for an early pulse. (Col. 5, lines 28-30) It would be obvious to one skilled in the art to use Kim's method of counting to provide efficient synchronization of the pulses, wherein the pulses are shifted by the amount of lead/lags.
7. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent No.: 3544717) in view of Marko et al (US Patent No.: 5463351) and further in view of Rattlingourd (US Patent No.: 4280099).
 - a. **Claim 7** inherits all the limitations of claim 6, but claim 6 does not disclose a data transition pulse counter and a lead and lag generator producing lead and lag signals when a data transition pulse occurs within the search window, Rattlingourd discloses a counter or detector for counting or sensing pulses within a window or duration (Fig. 1, label 14 and Col. 3, lines 44-47) and a lead and lag generator for generating lead and lag signals (Fig. 1, labels 16 and 38

and Col. 5, lines 13-23) when the data transition pulse occurs within a window (Col. 5, lines 13-23 and Col. 3, lines 44-48). It would be obvious to one skilled in the art to provide synchronized clock and data signal with reduced jitter. (Col. 3, lines 9-12)

8. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (US Patent No.: 3544717) in view of Marko et al (US Patent No.: 5463351), further in view of Rattlingourd (US Patent No.: 4280099), further in view of Kim (US Patent No.: 5420895) and further in view of Tucci (US Patent No.: 5097489).
- a. **Claim 8** inherits all the limitations of claim 7 but claim 7 does not disclose a window delay and a timing delay. Tucci discloses a data synchronizer comprised of a window delay for delaying the data pulses by $\frac{1}{2}$ period delay and the pulses are centered within the window. Although Tucci does not disclose a timing delay, Kim discloses a timing delay (Fig. 2, label 50) for delaying the timing pulses by a timing pulse delay (Fig. 2, label PCO-PC4), wherein the timing pulse delay is generated by a timing pulse delay adjustor (Fig. 2, label 40) and the timing pulse delay is only adjusted when the running count exceeds a threshold (Col. 3, lines 40-45 and Col. 5, lines 28-38) It would be obvious to one skilled in the art to incorporate Rattlingourd, Kim, Tucci, Smith and Marko et al's inventions to provide a faster method of producing a synchronized data/clock signal.

Conclusion

9. This is a continuation of applicant's earlier Application No. 10092758. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
10. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Linda Wong

A handwritten signature in black ink, appearing to read 'Linda Wong', with a long horizontal flourish extending to the right.

DACHA
PRIMARY EXAMINER